CHAPTER 3

West Coast Redefined

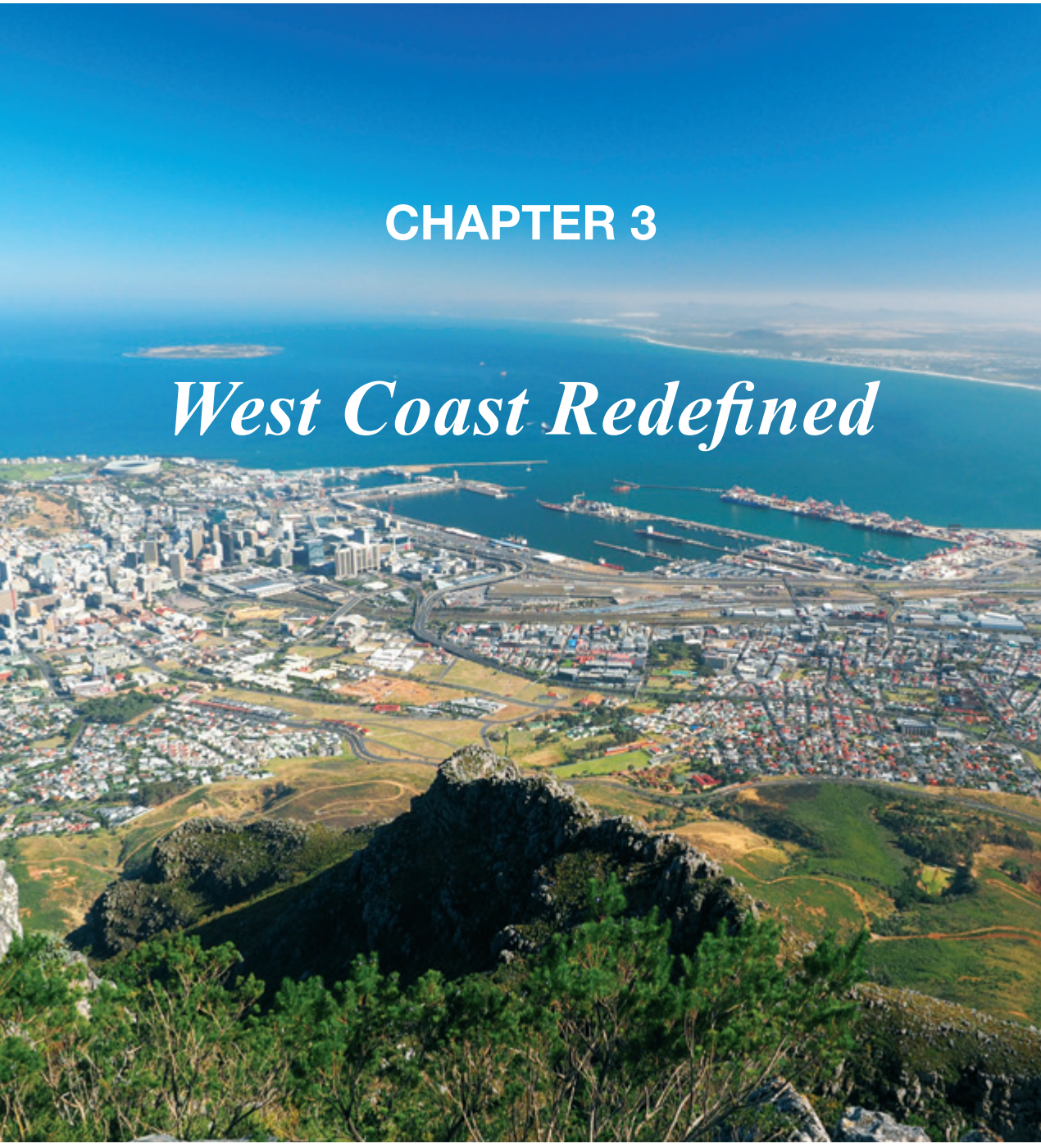

Figure 149. Our human footprint as seen from Devil's Peak.

Welcome to the Anthropocene

I ask for a window seat away from the wing. The bird's-eye view from high above reveals an extent and dimension of the landscape that is unfamiliar to me on the ground (Fig. 149). On those days when the air is transparent, the view alone seems to justify the price of the ticket. With my nose pressed to the window glass on a late afternoon flight to Johannesburg, my proximal world rapidly expands into a two-dimensional array of variously sized and coloured rooftops subdivided by roads and parking lots. Flashes of bright sunlight are shot off window panes, shiny cars and broken glass scattered in rubbish heaps as the plane lifts higher and banks into a north-east turn. Shanty towns, large industrial complexes, canalised riverbeds and up-scale leafy suburbs dotted with turquoise swimming pools and AstroTurf sports fields pass below. The city ends against a grove of eucalyptus trees that transition into dark evergreen shrubland on the upper slopes of the Tygerberg. Just beyond the crest of the Tygerberg are several enormous pits carved out of the rolling landscape. The stepped, contoured ledges of the pits give them the look of enormous tiered bowls. It is from these mines that rock aggregate – the dark angular stones suspended in concrete and embedded in asphalt road surfaces – is blasted, pulverised and hauled out all over the Cape to build it up, to pave it over.

As we clear the Tygerberg, a mosaic of farms presents as a quilt of brown tilled soils and green fields. The dark renosterveld evergreen plants, still present on the Tygerberg, are absent over the expanse of gently rolling hills where they once grew. The few patches that remain are preserved in steep gullies and hilltops out of reach of the plough. As the plane banks east, light from the setting sun reflects off a multitude of small farm dams, so many artificial lakes essential to the rows of vineyards and fruit orchards. The rolling hills of the coastal plain abut the Cederberg Mountains, whose lower flanks are covered by dark-green pine plantations. The latest large dam, built in the upper reaches of the Berg River, holds up to 130 billion litres. All these dams, big

and small, feed water irrigation schemes and provide farms some hedge against the hot and dry summers and the whims of winter rainfall. Irrigation combined with genetic modifications, fertilisers and pesticides make for productive farms.

What I take in from the plane's window is just a small, regional microcosm of the global Green Revolution, which requires 55% of ice-free land and over 70% of its fresh water to keep all 7-plus billion of us fed.[1] In the remaining twilight, as we fly over the seemingly out-of-reach craggy mountain slopes, a large swathe of ground mottled brown and black appears with scattered white sandstone rock. I realise that this scorched, lifeless patch of ground was cut out of the evergreen fynbos shrubland by a recent fire that raced up from the valley below to consume half the mountainside. The twilight turns to darkness as the plane encroaches upon the elevated Karoo, whose expansive semi-arid landscape is spotted with widely scattered herds of sheep too small to see.

When I finally draw back from the window, the one overwhelming impression that lingers in my mind is the size of our human footprint – an impression that is further heightened when I think of what I see every day on the ground, where precious little has been spared our influence. Nearly all the plants and animals come from elsewhere. Pine and eucalyptus plantations and grapevines cover hillslopes, maple and oak trees line the roadside, rooikrans covers once active dune fields, and black wattle spreads rapidly along stream banks in remote mountain areas. Gone are most of the large indigenous animals, replaced by sheep, cattle, horses, cats and dogs; European starlings compete with local birds; most of the indigenous freshwater fish are now displaced by alien bass and trout; Mediterranean mussels push aside the native black mussel along the rocky seashore; and the Mediterranean white garden snail is proliferating. Low-lying areas have been most altered, with only small, semi-preserved fragments remaining on the Cape Flats, while more distant mountainous areas are relatively unscathed by human activities on account of their shear inaccessibility (Fig. 150).

We humans have redefined the West Coast, its physical and living landscapes variably transformed by our activities. Sadly, the West Coast is hardly unusual in this respect, but is typical of most places on Earth where people have settled in urban centres. The impact of people across the globe has become so pervasive that some refer to the time we live in now as the Anthropocene, the human (*anthropo*) epoch (*cene*). The idea originated among scientists, not because a new epoch was needed for the geological timescale, but to emphasise the enormity of our impact. In this conceptual sense, the Anthropocene has gained currency in many different areas beyond science, as people become aware of the need to deal with the many threatening consequences of our runaway success.

Extract from Compton, J.S., 2021. *West Coast, A Natural History*, Earthspun Books (johnscompton.com).

Figure 150. Our pervasive impact is revealed in the patchwork of farms, with most areas of the West Coast, outside of the Cederberg and Piketberg mountains, significantly altered by humans.

As our global population grew exponentially from less than 1 billion to over 7 billion in the last 200 years, so too have our cumulative impacts. Human impact started early on with the spread of hunter-gatherers throughout the world during the last 50 thousand years. Although few in number, their coordinated hunting skills led to the extinction of many of the largest animals on Earth (megafauna), whose loss significantly altered the dynamics of the ecosystems they once occupied, impacting a cascade of other organisms and undoubtedly leading to the extinction of at least some of them. The invention of farming appropriated much of the wilderness, and much of the available fresh water, for growing food. The burning of fossil fuels – coal, oil and gas – to fuel the Industrial Revolution increased the CO_2 content of the atmosphere from 280 to over 400 parts per million (0.028% to 0.04%). The rise in CO_2 and other greenhouse gases corresponds to a rise in mean global surface temperatures. To date, the oceans have taken up roughly a quarter of our CO_2 emissions,[2] an uptake that has reduced the amount of warming thus far, but an uptake that has also altered the chemistry of the ocean, further stressing already overfished marine ecosystems.

The knock-on effect of all the above has been a rapid acceleration in extinction rate, estimated to be 1000 times greater than it was prior to the appearance of people,[3] and

largely driven by loss of habitat, hunting and fishing, and introduction of alien species. We appear to be in the midst of a mass-extinction event of our own making, one that is comparable to that at the end of the Cretaceous 66 million years ago, when massive volcanic eruptions and a 10-km asteroid wiped out 65% of species on Earth, including the non-avian dinosaurs. In sum, we have become a geological force in our own right, and our impacts will end up permanently embedded as a distinct 'golden spike' or marker horizon that will remain discernible in the far-distant future rock record.

Scientists debate how best to define the start of the Anthropocene as a geological epoch. Megafauna extinctions, the start of farming, the Industrial Revolution and the Trinity nuclear bomb test have all been put forward as possibilities. However, the main point in proposing the Anthropocene is to consider, not so much when it commenced, but rather when it might end. The worry is that it will be all too brief, with our grandiose presence on Earth ultimately reduced to a thin layer, similar to the thin band of clay that defines the end of the Cretaceous and the rule of the dinosaurs. Might our thin band have an anomalously high concentration of radioactive elements from the fallout of an all-out nuclear war? It is from this more pressing perspective – a frantic waving of the red flag – that the Anthropocene has taken traction in the popular press, as well as in other disciplines outside of science. We may have unintentionally arrived at the precarious state we find ourselves in today, but the message is clear: we need to ensure the Anthropocene is a long and well-lived epoch and not a sad, thin layer marking the exponential rise and then precipitous collapse of humanity.

As we saw in Chapter 2, change is not new to the West Coast. Pockets of preserved fossil life provide windows into the past and reveal that the living landscape has changed considerably, with many of the fossil animals extinct – gone forever, never to return. The vegetation has also changed in response to more seasonal, cooler and drier climate and the intentional burning of the veld by people early on. But these changes took place over tens of thousands to millions of years, whereas most of the changes viewed from my plane window date to just the last century. Major changes on the West Coast, as elsewhere throughout the world, have accelerated since the Industrial Revolution, propelled by energy released from the burning of fossil fuels. The earliest coal-powered engines were invented to replace horse-driven pumps used to extract groundwater that flooded English coal mines. These first engines, combined with many other factors, sparked the Industrial Revolution in England in the 18th century. The Industrial Revolution spread rapidly with the expansion of the British Empire, whose rule of the seas required the British to take the Cape as a major strategic point for trade with the East.

Extract from Compton, J.S., 2021. *West Coast, A Natural History*, Earthspun Books (johnscompton.com).